

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-214282

(43)Date of publication of application : 20.08.1996

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(51)Int.Cl.

H04N 7/16

G11B 15/02

H04N 5/44

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(21)Application number : 07-016130

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(22)Date of filing :

02.02.1995

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### (54) PROGRAM GUIDE INFORMATION PROCESSING SYSTEM AND PROGRAM RESERVING SYSTEM

(57)Abstract:

**PURPOSE:** To automatically reserve program recording while observing program guide information by receiving a request relating to program guide information from a viewer and displaying the program guide information corresponding to the request to a subscriber's side TV receiver.

**CONSTITUTION:** In a program guide information processing system in a CATV system capable of executing bidirectional communication, a program guide information storing device 12 for storing the program guide information of respective programs broadcasted by respective broadcasting stations is built in a CATV station side system 1. At the time of receiving a request for program guide information from a viewer, the program guide information corresponding to the request is displayed on a TV receiver 21 in a subscriber's system 2. Since each subscriber's system 2 does not require large storage capacity for storing the program guide information, the subscriber's system 2 can be simplified. Since a storage device with large capacity can be used for the CATV station side system 1, large quantity of program guide information can be stored. Thereby each viewer can automatically reserve program recording based upon the program guide information.

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than the examiner's decision of rejection  
or application converted registration]  
[Date of final disposal for application]  
[Patent number]  
[Date of registration]  
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## CLAIMS

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[Claim(s)]

[Claim 1] In the program guide information processing system in the cable television (it is called CATV) system in which two-way communication is possible in the system by the side of a CATV station In the system by the side of the subscriber who established a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station, and joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which outputs the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, Program guide information processing system characterized by having a program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means.

[Claim 2] the case where the information as which a viewer specifies programs, such

as a program name and a channel number, is not required -- said control means -- said time check -- the program guide information processing system according to claim 1 characterized by outputting the current date and the time of day which are obtained with a means as program assignment information, and sending out program guide information based on the current date and time information from a CATV station.

[Claim 3] Each program guide information corresponding to a program memorized at said CATV station side is program guide information processing system according to claim 1 characterized by always being rewritten corresponding to modification of the content of program guide information.

[Claim 4] In the program guide information processing system in the CATV system in which two-way communication is possible in the system by the side of a CATV station In the system by the side of the subscriber who established a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station, and joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which outputs the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, A signal recovery means to restore to the usual program broadcast signal which was controlled by the recovery control signal based on the channel number information included in said program assignment information outputted from said control means, and was taken out from said signal separation means as a program video signal, Program guide information processing system characterized by having an image selection means to choose one side of the program guide video signal acquired from the program video signal acquired from this signal recovery means, or said program guide display-control means with the image selection signal from said control means, and to output it.

[Claim 5] the case where the information as which a viewer specifies programs, such as a program name and a channel number, is not required -- said control means -- said time check -- the program guide information processing system according to claim 4 characterized by outputting the current date and the time of day which are obtained with a means as program assignment information, and sending out program

guide information based on the current date and time information from a CATV station.

[Claim 6] Each program guide information corresponding to a program memorized at said CATV station side is program guide information processing system according to claim 4 characterized by always being rewritten corresponding to modification of the content of program guide information.

[Claim 7] In the program reservation system using the program guide information in the CATV system in which two-way communication is possible in the system by the side of a CATV station In the system by the side of the subscriber who established a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station, and joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, When said control means receives the information about reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display means, the information from this reservation information storage means, and said time check -- based on the information on time from a means with the reservation control means which outputs a control signal The program reservation system using the program guide information characterized by having the VTR control means which controls a video tape recorder (it is called VTR) and a television set in response to the control signal from this reservation control means.

[Claim 8] If just before the start time of said reserved program and end time are judged and it becomes just before start time and end time The information on the program proper is read from said reservation information storage means, and a program guide demand signal including the information on the program proper is sent out to a CATV station side. In a CATV station side The program guide information corresponding to it is read. To a subscriber system side in a delivery and subscriber system side Said start time and end time when the program was set up beforehand,

the start time of the program guide information on the newly sent program, and end time are compared. The program reservation system using the program guide information according to claim 8 characterized by judging the existence of modification of the broadcasting hours of a program and performing control corresponding to it.

[Claim 9] In the program reservation system using the program guide information in the CATV system in which two-way communication is possible in the system by the side of a CATV station In the subscriber side system which established a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station, and joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, A signal recovery means to restore to the program broadcast signal which was controlled by the recovery control signal based on the channel number information included in said program assignment information outputted from said control means, and was taken out from said signal separation means as a program video signal, An image selection means to choose one side of the program guide video signal acquired from the program video signal acquired from this signal recovery means, or said program guide display means with the image selection signal from said control means, and to output it, When said control means receives the information about reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display means, the information from this reservation information storage means, and a time check -- based on the information on time from a means with the reservation control means which outputs a control signal The program reservation system using the program guide information characterized by having the VTR control means which controls VTR and a television set in response to the control signal from this reservation control means.

[Claim 10] If just before the start time of said reserved program and end time are

judged and it becomes just before start time and end time The information on the program proper is read from said reservation information storage means, and a program guide demand signal including the information on the program proper is sent out to a CATV station side. In a CATV station side The program guide information corresponding to it is read. To a subscriber system side in a delivery and subscriber system side Said start time and end time when the program was set up beforehand, the start time of the program guide information on the newly sent program, and end time are compared. The program reservation system using the program guide information according to claim 10 characterized by judging the existence of modification of the broadcasting hours of a program and performing control corresponding to it.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] In the CATV system in which two-way communication is possible, this invention relates to the program guide information processing system which enabled reservation of the program of the displayed program guide information, and the program reservation system using program guide information while enabling the display of the program guide of the program, when a viewer demands the guide information on a program if needed.

[0002]

[Description of the Prior Art] Generally, the receiving system of television (henceforth television) was a transceiver system of the one direction of only receiving the electric wave sent from each broadcasting station. Therefore, as for the viewer, it was common to have seen the journal with which the newspaper television race card and the television race card for a part for 1 week and 1 month were carried, to have checked the content of broadcast of each broadcasting station, and to choose a program.

[0003] On the other hand, the program guide information sent from each broadcasting station is received by the television side, and it stores in the storage means which prepared it in the television receiver side, and a viewer reads the content of storage to arbitration, and some systems which can know the content of broadcast are also proposed.

[0004]

[Problem(s) to be Solved by the Invention] This conventional kind of system however, in a television receiver side Since it is the transceiver system of the one direction of

only receiving the electric wave sent from each broadcasting station, From the viewer side, a demand signal cannot be taken out to a broadcasting station side, but the program guide information sent from each broadcasting station is stored in the storage means prepared for the television receiver side, and actuation in which a viewer read the content of storage if needed had to be performed. Therefore, in the former, since it was necessary to form a storage means to memorize program information in a television receiver side, it was hard to use the thing of not much big storage capacity from the field of a price etc. as a storage means, and, for this reason, the amount of information stored was restricted.

[0005] By the way, a CATV system is spreading recently. Since two-way communication is possible for this CATV system, it can consider that store the information from each broadcasting station collectively by the CATV station side, and a viewer reads it by using that informational transfer is possible by the CATV station and viewer side.

[0006] Then, this invention is set to the CATV system in which two-way communication is possible. The function to memorize and store the program guide information from each broadcasting station side in a CATV station side is given. It makes it possible to refer to the program guide information from a viewer side to arbitration. Moreover, it aims at offering the program reservation system using the program guide information processing approach and program guide information which enabled reservation of the program corresponding to the program guide information referred to automatically at VTR and the television set.

[0007]

[Means for Solving the Problem] program guide information processing system [ in / in order to attain said object carried out / the CATV system in which two-way communication of this invention is possible ] -- it is and a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station is formed in the system by the side of a CATV station. moreover, in the system by the side of the subscriber who joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, The program guide information taken out with this signal separation means is inputted, and it has a program guide display means to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display

from said control means.

[0008] Moreover, this invention forms a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station in the system by the side of a CATV station in the program guide information processing system in the CATV system in which two-way communication is possible. moreover, in the system by the side of the subscriber who joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, A signal recovery means to restore to the usual program broadcast signal which was controlled by the recovery control signal based on the channel number information included in said program assignment information outputted from said control means, and was taken out from said signal separation means as a program video signal, It has an image selection means to choose one side of the program guide video signal acquired from the program video signal acquired from this signal recovery means, or said program guide display-control means with the image selection signal from said control means, and to output it.

[0009] and -- the case where the information as which a viewer specifies programs, such as a program name and a channel number, is not required -- said control means -- said time check -- the current date and the time of day which are obtained with a means are outputted as program assignment information, and program guide information is sent out based on the current date and time information from a CATV station. Moreover, each program guide information corresponding to a program memorized at said CATV station side is always rewritten corresponding to modification of the content of program guide information.

[0010] Moreover, this invention forms a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station in the system by the side of a CATV station in the program reservation system using the program guide information in the CATV system in which two-way communication is possible. moreover, in the system by the side of the subscriber who joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at



least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, When said control means receives the information about reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display means, the information from this reservation information storage means, and said time check -- it has the reservation control means which outputs a control signal based on the information on time from a means, and the VTR control means which controls VTR and a television set in response to the control signal from this reservation control means.

[0011] Moreover, this invention forms a program guide information storage means to memorize at least the program guide information on each program broadcast at each broadcasting station in the system by the side of a CATV station in the program reservation system using the program guide information in the CATV system in which two-way communication is possible. moreover, in the subscriber side system which joined said CATV station The control means which outputs the control signal according to the demand in response to the demand from a viewer at least, A control signal including the program assignment information based on the demand from a viewer outputted from a means and said control means is received. the time check which gives the current date and time information -- A program guide demand means to output the program guide demand signal corresponding to the program assignment information to a CATV station side, A signal separation means to separate the usual program broadcast signal sent from a CATV station, and the program guide information corresponding to said program assignment information, A program guide display means to input the program guide information taken out with this signal separation means, and to output the program guide video signal corresponding to that control signal in response to the control signal about the program guide information display from said control means, A signal recovery means to restore to the program broadcast signal which was controlled by the recovery control signal based on the channel number information included in said program assignment information outputted from said control means, and was taken out from said signal separation

means as a program video signal, An image selection means to choose one side of the program guide video signal acquired from the program video signal acquired from this signal recovery means, or said program guide display means with the image selection signal from said control means, and to output it, When said control means receives the information about reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display means, the information from this reservation information storage means, and a time check -- it has the reservation control means which outputs a control signal based on the information on time from a means, and the VTR control means which controls VTR and a television set in response to the control signal from this reservation control means.

[0012] And if just before the start time of said reserved program and end time are judged and it becomes just before start time and end time The information on the program proper is read from said reservation information storage means, and a program guide demand signal including the information on the program proper is sent out to a CATV station side. In a CATV station side The program guide information corresponding to it is read. To a subscriber system side in a delivery and subscriber system side Said start time and end time when the program was set up beforehand, the start time of the program guide information on the newly sent program, and end time are compared, the existence of modification of the broadcasting hours of a program is judged, and it is made to perform control corresponding to it.

[0013]

[Function] Thus, since it is the system by which a means to store program guide information in a CATV station side is established, and each subscriber owns this jointly between this invention, in each subscriber side, the mass storage in which program guide information is stored is not needed, but simplification of the system by the side of a subscriber can be attained, and low-pricing becomes possible. Moreover, since it becomes possible to use a mass storage means by establishing a means to store program guide information in a CATV office side, program guide information can be accumulated in a large quantity. For example, it is also possible to also see the program guide information broadcast by the end of today one year ago and to also increase amount of information [ as opposed to / it is possible and / one program ], and not only text but sound information, such as image information, such as an animation and a still picture, voice, and music, can be treated.

[0014] Moreover, by this invention, since required program guide information can be called at any time, in order to acquire required program guide information, the needed useless processing can be excluded by the conventional method that broadcast always had to be supervised. Furthermore, since said program guide information is rewritten at any time in a CATV office corresponding to modification of program

broadcasting hours etc., it can acquire the newest guide information.

[0015] Moreover, in this invention, it becomes possible to take the synchronization of the content of program guide information, and the content of the program. For example, when television is switched off and you begin to watch a certain program, it may immediately be unable to judge what kind of program the program is. In such a case, since the program guide information on the program projects by changing from a control panel to a program guide, the content of a program can be known in detail immediately. Moreover, if a program to watch among the programs broadcast now is looked for for program guide information and the program guide information projects, he can watch the target program only by changing to TV program broadcast immediately. For example, although the program name and the content are understood in the program which should be broadcast at the event, when a channel number is not known, you can watch the target program early by searching in a program guide.

[0016] Moreover, in this invention, looking at program guide information, only by pushing an image transcription preprogrammed key, after that, image transcription reservation and reception reservation can be made automatically, and modification of broadcasting hours etc. can be coped with automatically. Moreover, it also becomes possible to find out re-broadcast from the program guide information on the program broadcast in the past, and to carry out image transcription reservation of the re-broadcast.

[0017]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

[0018] (Example 1) Drawing 1 shows the overall system configuration for explaining the program guide information processor of this invention, and the system by the side of a CATV office with rough 1 and 2 are the rough systems by the side of a subscriber. The program transfer means 11 for transmitting the program sent from each broadcasting station to each subscriber and a program guide information storage means 12 to memorize the program guide information sent from each broadcasting station are formed in the system by the side of the CATV station 1. The program guide information G1 and G2 and ... which are broadcast for every broadcasting station at that broadcasting station (or already broadcast) are stored in this program guide information storage means 12. Since this program guide storage means 12 can use a storage means with mass storage capacity, it has the capacity which can also memorize the program broadcast in the past as well as the program which is about [ of the schedule broadcast from now on ] 1 year minute. In addition, said each program guide information G1 and G2 and ... correspond to each program, and it mentions later about the content of data.

[0019] On the other hand, the program guide information processing demand terminal 23 required in order that the system 2 by the side of a subscriber may realize this invention while VTR22 is formed a monitor (television receiver) 21 and if needed is

formed. And the program guide information processing terminal 23 of the system 1 by the side of a CATV station and the subscriber side system 2 is connected by the coaxial cable 3, and informational transfer is made through this coaxial cable 3.

Transfer of this information is later explained to a detail.

[0020] Drawing 2 shows said each program guide information G1 and G2 and the example of data of ..., and each program guide information G1 and G2 and ... are constituted by an identification number, a channel, a date, start time, end time, text, image information, sound information, additional information, etc. It is the number of the proper for said identification number being prepared corresponding to each program, and identifying each program, and this identification number is a number required when a system processes, and when a viewer operates it, it is a number without the need. Moreover, the start time of the program and the end time of the channel number corresponding to each broadcasting station in a channel and start time are the end time of the program. Moreover, text is information (for example, a program name, a performer name, an outline, etc.) which explains the content of the program etc. in written form briefly, and image information is information which explains the content of the program by the image (a static image or animation). This image information is held in the condition of having been compressed depending on the amount of data, and can be developed now if needed. In addition, it is also possible to hold all (or already broadcast) of the content of the program and the content broadcast depending on the amount of data. Moreover, sound information is information, such as speech information which accompanied the music information or image information on a program, such as theme music and a theme song, as voice related to that program, where this speech information is also compressed depending on the amount of data, it is held, and it can be developed now if needed.

[0021] Additional information is information, such as existence of the information about the re-broadcast of those other than each [ these ] information (for example, the program), the provider of a program, and the possibility of a televising time change.

[0022] The program guide information G1 and G2 for every program which has such various information, and .. will be stored in the program guide storage means 12 of the system 1 by the side of a CATV office like a part for a part and what week how many days, and it is technically possible to also memorize a program guide one year after or the program which went back one year ago.

[0023] that drawing 3 indicates the configuration of said program guide information processing terminal 23 to be -- it is -- the program guide demand means 231, the signal separation means 232, the program guide display means 233, a control means 234, and a time check -- it consists of means 235 etc.

[0024] Said control means 234 holds the information (this is called program assignment information) which specifies programs, such as the information which a viewer inputs from an external input control panel (for example, remote control-type control panel as shown by drawing 4 ), i.e., an identification number, a date, time of

day, and a channel number. This program assignment information is changed each time by inputting each value from an external input control panel (only henceforth a control panel). And a control means 234 controls the program guide demand means 231 based on this program assignment information. This program guide demand means 231 sends out a program guide demand signal to the system 1 by the side of a CATV station in response to the demand control signal from a control means 234. The above mentioned program assignment information is included in the demand control signal from said control means 234, and the program assignment information is also included in said program guide demand signal, and is sent out to a CATV station side. in addition -- the case where program assignment information, such as the date, time of day, and a channel, is not specified from a control panel although said program assignment information is changed by setting up each value from a control panel each time -- a time check -- let the current time from a means 235, and a date be program assignment information.

[0025] Moreover, a control means 234 holds program guide display-control information, outputs a display-control signal, and also performs control of the program guide display means 233. This program guide display means 233 inputs the program guide signal separated with the signal separation means 232 among the multiplexed signals of the broadcast signal sent from the system 1 by the side of a CATV station, and a program guide signal, and after accumulating in a buffer (not shown) and changing into a video signal according to the display-control signal from a control means 234, it once outputs it as a program guide video signal. The information about the informational class and the informational method of presentation which should be outputted as a video signal is included in the display-control signal from said control means 234. For example, if there is much amount of information in case text is displayed, it may be unable to display on a television screen at once. In such a case, although displayed by dividing into some pages, control of this division display is performed by said display-control signal. Moreover, when information is compressed, it also has the function to perform the expansion. The image information on the compressed animation develops reading from a buffer, and is changed and outputted to a video signal. Furthermore, it is also possible to take the synchronization with an image and voice and to reproduce. Thus, although a control means 234 holds program guide display-control information and controls the program guide display means 233 by the display-control signal, the content is changed also for this program guide display information by the input from said control panel. For example, if the signal with which a page is changed from a control panel is outputted, display-control information will be outputted according to it, and the content of a display will be changed.

[0026] As drawing 4 shows an example of said remote control-type control panel and shows it in this drawing Selection of a channel, When image-transcription-reserving and receiving reserving the television broadcasting key 54 for watching the program guide key 53 for requiring the sound-volume key section 52 for carrying out

adjustable [ of the numerical-keypad section 51 for performing time of day, setting out of the date, etc., and the sound volume ], and a program guide, and the usual television broadcasting program, and a program to watch When the program preprogrammed key 55 and program guide information to operate are displayed and the program guide information has information over a number of pages It starts from the page key 56 which carries out adjustable 1 page at a time in a plus direction or the minus direction with a certain page as the starting point, and a certain time amount. Every one channel key 58 which carries out adjustable in a plus direction or the minus direction, information-display section 59 as which the content of actuation is displayed are prepared in the plus direction or the minus direction with the time amount key 57 which carries out adjustable, and a certain channel number as the starting point. In addition, the jump of said page key 56 is also attained by using a numerical keypad 51 collectively. For example, if a numerical keypad 51 is pressed with "6" and the page key 56 is pressed with "+", it will jump to 6 pages. The same of such usage is said of the time amount key 57 or the channel key 58. Moreover, the "p" carbon button of the center of the page key 56 can call a page to display directly by combining with a numerical keypad 51 and using. For example, from every page, if it pushes with "4" and "p", the 4th page will be displayed.

[0027] Using such a control panel, when a viewer is going to look at a program guide, the following processings are performed. First, a channel number, a date, and time of day are set up by the numerical keypad 51 of the control panel shown by drawing 4 . If this setting out is performed, the content of setting out will be displayed on the information-display section 59 like drawing 4 . Then, the program guide key 53 is pressed. Thus, if setting out of a channel number, a date, and time of day is made, the control means 234 of the program guide information processing terminal 23 will send a demand control signal including this program assignment information to the program guide demand means 231, after checking said channel number, a date, and time of day as program assignment information and holding it. At this time, a control means 234 resets the program guide display-control information for controlling the program guide display means 233, and updates it to the default.

[0028] If the program guide demand means 231 receives the demand control signal from a control means 234, a program guide demand signal will be outputted and this program guide demand signal will be sent to the system 1 by the side of a CATV station through a coaxial cable 3. Thereby, in a CATV station side, based on the program assignment information included in the viewer's content of setting out, i.e., a program guide demand signal, the content of the program guide information storage means 12 is searched, and the program guide information that it corresponds is read and it sends to the system 2 by the side of a subscriber. This program guide information is inputted into the signal separation means 232 of the program guide information processing terminal 23. With the signal separation means 232, a general broadcast signal and program guide information are separated, and program guide

information is sent to the program guide display means 233.

[0029] The program guide display means 233 once holds the sent program guide information to a buffer, and outputs a program guide video signal in response to the display-control signal from a control means 234. Thereby, the program guide information on the program corresponding to the content which the viewer set up projects on the screen of the television receiver 21.

[0030] As an example of the program guide information displayed, it is a content as shown, for example in drawing 5 . When there are the date 101 of a broadcast schedule, a channel number 102, the program start time 103, the program end time 104, the text 105 showing the contents of a program (a program name, the main performer names, etc.), and a program guide also after the following page The page number 107 the display page advice 106 showing the display page and the easy content of a display and on display [ showing a current display page ] etc. is displayed. In order to display the 1st page and to know a still more detailed content, by a viewer's operating the page key 56 of a control panel, and moving a page with the 2nd page and the 3rd page, corresponding to it, a display-control signal is outputted from a control means 234, and the content of a display changes and goes by this drawing 5 . For example, from 2 pages, to 5 pages, text, such as an outline of a program, is displayed and 6 pages and 7 pages of image information which shows the scene of a program etc. are displayed.

[0031] And if a viewer operates the time amount key 57 of a control panel and next demands the program guide of the time amount before and behind that, a control means 234 will rewrite program assignment information corresponding to the demand of \*\*\*\*\*, and will send a new demand control signal to the program guide demand means 231. Thereby, the program guide information according to a demand of a viewer is displayed by said same processing. In addition, if there is no demand of modification from a viewer, it will be in the condition of the waiting for the next program guide demand.

[0032] On the other hand, supposing a viewer operates the program guide key 53, without specifying a channel, a date, initiation, end time, etc., the manipulate signal will be given to the control means 234 of the program information-requirements terminal 23. in this case, the time check from a control means 234 -- a demand control signal including program assignment information, such as current time amount clocked with the means 235, a date of that day, and a channel number set up at that event, is outputted to the program guide demand means 231.

[0033] The program guide demand means 231 sends a program guide demand signal to the system 1 by the side of a CATV station through a coaxial cable 3 in response to the demand control signal from a control means 234. In this case, since it is program assignment information, such as current time amount, a date of that day, and a channel number set up at that event, in a CATV station side, the program assignment information on a program guide demand signal searches the content of the program

guide storage means 12 corresponding to it, reads the program guide information that it corresponds, and sends it to a subscriber side.

[0034] Drawing 6 is a flow chart which shows the above processing. In this drawing, a program guide demand is advanced from the exterior (control panel) (step S1). And next, if there is no program assignment information in whether there is any program assignment information, such as a channel number, and the date, time amount, (step S2), the current date, time amount, etc. will be specified automatically (step S3), and if program assignment information, such as a channel number, time amount, and a date, is already inputted from the control panel, the program assignment information will be taken out (step S4). A demand control signal is outputted from a control means 234 to the program guide demand means 231 (step S5), and a program guide demand signal is sent to the CATV station 1 from the program guide demand means 231 (step S). In a CATV station side, the program guide information according to a demand of a viewer is read, it transmits to a subscriber side (step S7), and signal separation is performed in a subscriber side (step S8). At this time, to the program guide display means 233, a display-control signal is taken out (step S9) and program guide information projects with this display-control signal from a control means 234 (step S10). And if it judges whether the content of a program guide display has modification (step S11) and there is modification, it will return to step S9 (for example, a page is moved to a degree), and the content of a display will be changed by the display-control signal from a control means 234. In decision of said step S11, if it judges whether program assignment information has modification if there is no modification in the content of a display by which it is indicated by current (for example, modification of a channel etc.) (step S12) and program assignment information has modification, it will return to step S4 and will wait for the input from a control panel.

[0035] Since according to this example 1 a means to store program guide information in a CATV office side can be established and each subscriber can share this as explained above, the mass storage in which program guide information is stored in each subscriber side is not needed, but simplification of the system by the side of a subscriber can be attained, and low-pricing becomes possible. Moreover, since it becomes possible to use a mass storage means by establishing a means to store program guide information in a CATV office side, program guide information can be accumulated in a large quantity. For example, it is also possible to also see the program guide information broadcast by the end of today one year ago and to also increase amount of information [ as opposed to / it is possible and / one program ], and not only text but sound information, such as image information, such as an animation and a still picture, voice, and music, can be treated.

[0036] Moreover, since required program guide information can be called at any time, in order to acquire required program guide information according to this example 1, useless processing in which broadcast always had to be supervised can be excluded.

[0037] Furthermore, since said program guide information is rewritten at any time in a



CATV office corresponding to modification of program broadcasting hours etc., it is more exact than the program guide information acquired with a newspaper, a journal, etc. For example, when the broadcasting hours of a sport relay broadcast are extended, a subsequent program carries down and may be broadcast, but also when such, this program guide information can offer exact information. Since the program guide information by the side of a subscriber is updated by the demand signal from a subscriber side further again whenever it is accessed by the storage means by the side of a CATV station and the newest information is sent to a subscriber, it can respond also to modification of the sudden broadcast schedule by a natural disaster etc.

[0038] (Example 2) Although the overall system configuration in an example 2 is the same as what was shown by drawing 1 , it is considering the program guide information processing terminal 23 of the system 2 by the side of a subscriber as a configuration like drawing 7 . In this example 2, it considers as the configuration which added the signal recovery means 236 and the image selection means 237 further at the program guide information processing terminal 23 in an example 1. Namely, as that example of operation For example, it is made for the program to project on a screen by displaying program guide information on a television screen, and pressing the television broadcasting key 54 (referring to drawing 4 ) as it is, if there is program guide information that he wants to change and see a channel. In order to enable such actuation, the signal recovery means 236 and the image selection means 237 are established.

[0039] The signal recovery means 236 has the function of the so-called tuner which outputs a video signal in response to the general broadcast signal separated with the signal separation means 232. This signal recovery means 236 changes a broadcast signal into a video signal in response to a recovery control signal including channel information according to that channel information from a control means 234. This channel information is the same also as the channel information on the program guide information currently temporarily held in the buffer of the program guide display means 233 identically to the channel information on the above mentioned program assignment information currently held at the control means 234. therefore, the date and time information of program assignment information -- a time check -- if the same as that of the current time shown by the means 235, the video signal of the program guide information outputted from the program guide display means 233 and the program video signal outputted from the signal recovery means 236 will serve as the same program. In other words, I hear that the synchronization with the content of the program guide and the content of the program which receives can be taken, and it is.

[0040] In addition, as long as it is made to be possible [ control of the signal recovery means 236 used here ] from the exterior, it may be a tuner by which internal organs are carried out to a television receiver or VTR.

[0041] Moreover, said image selection means 237 inputs the program guide video signal from the program guide display means 233, and the program video signal from the signal recovery means 236, and gives one of video signals to the image input terminal of a television receiver in response to the image selection means from a control means 234.

[0042] In such a configuration, in addition to the processing shown in the example 1, a control means 234 outputs a recovery control signal to the signal recovery means 236 at the same time it outputs a demand control signal to the program guide demand means 231. As described above, the channel information in program assignment information is included in this recovery control signal, and it restores to a broadcast signal based on this channel information. Moreover, if a viewer changes a channel, a control means 234 will rewrite receiving channel information.

[0043] Thereby, in the example 2, the following can be realized and, in addition to the effectiveness of an example 1, still bigger effectiveness is acquired.

[0044] That is, in the example 2, the program name broadcast now can be known immediately, being able to change the program and its program guide under televising in an instant, and watching a program. For example, when television is switched off and you begin to watch a certain program, it may immediately be unable to judge what kind of program the program is. In such a case, since the program guide information on the program (for example, program guide information as shown by drawing 5 ) projects by changing from a control panel to a program guide, the content of a program can be known in detail immediately.

[0045] Moreover, if a program to watch among the programs broadcast now is looked for for program guide information and the program guide information projects, he can watch the target program only by changing to TV program broadcast immediately. For example, although the program name and the content are understood in the program which should be broadcast at the event, when a channel number is not known, you can watch the target program early by searching in a program guide.

[0046] (Example 3) An example 3 enables timed recording of a program, referring to program guide information. Although it is the same as what was shown by drawing 1 as an overall system configuration in this example 3, the program guide information processing terminal 23 by the side of a subscriber is considered as a configuration like drawing 8 . That is, in this example 3, it is considering as the configuration which established a reservation information storage means 238 to be able to set in the example 2 and to accumulate guide information required for reservation among program guide information further as a component of the program guide terminal 23, the VTR control means 239 which controls VTR, and the reservation control means 240 which controls these.

[0047] Said reservation information storage means 238 accumulates an identification number, a date, start time, and termination time information for a reservation instruction as information required for reservation among program guide information

from the reservation control means 240 at the time of a carrier beam. Moreover, this reservation information storage means 238 outputs the identification number of the reservation program which corresponds a reservation confirmatory order at the time of a carrier beam from the reservation control means 240, and waits for new program guide information from the program guide display means 233. And if program guide information is received from the program guide display means 233, the received program guide information will be compared with information required for the already accumulated reservation, and the comparison result will be returned to the reservation control means 240.

[0048] Moreover, said VTR control means 239 outputs the VTR control signal which directs an image transcription and a halt of VTR in response to the instruction from the reservation control means 240. Said reservation control means 240 will issue a reservation instruction to the reservation information storage means 238, if a reservation instruction is received from a control means 234. In addition, a time check -- if the current time obtained from a means 235 approaches the reserved start time or end time of a program, a reservation confirmatory order will be given to the reservation information storage means 238, and a program guide demand will be given to a broth and a control means 234. Then, if the result of a reservation check is returned from the reservation information storage means 238 and said comparison result (comparison result of the program guide information newly sent from the CATV station side and information required for the already accumulated reservation) is correct, the signal which directs an image transcription and a halt will be outputted to the VTR control means 239. In addition, these concrete processings are explained below.

[0049] Here, when the program guide information on the program of the schedule broadcast from now on is displayed on the television screen and reserves an image transcription of the program on VTR, it explains just, referring to the flow chart of drawing 9 for \*\*. In addition, about the processing on which the program guide information on the program of the schedule broadcast from now on is displayed on a television screen, since the above mentioned examples 1 and 2 explained, the explanation is omitted here.

[0050] In order for a viewer to do image transcription reservation of the program guide information on the program of the schedule broadcast from now on currently displayed on the television screen now, the program preprogrammed key 55 (refer to drawing 4 ) of a control panel is pushed first (step S21). Thereby, a part of program guide information (the identification number of the program, the date of a broadcast schedule, broadcast start time, end time) which was held in the buffer of the program guide display means 233 and by which current projection appearance is carried out is accumulated in the reservation information storage means 238 (step S22). The reservation information accumulated in this reservation information storage means 238 is managed by the reservation control means 240.

[0051] the reservation control means 240 -- a time check -- if the current time from a means 235 is supervised and it judges that it is just before the start time of the broadcast scheduled day of the program in which the current date and time of day carried out image transcription reservation (step S23), and it is not just before start time and just before waiting and start time will come until just before start time, a reservation confirmatory order will be issued to the reservation information means 238. The identification number of the reservation guide information that the carrier beam reservation are recording means 238 corresponds a reservation confirmatory order is read, and it outputs to a control means 234 (step S24). A control means 234 updates the identification number of program assignment information to the identification number by which reading appearance was carried out from the reservation information storage means 238, and sends a program guide demand signal to a CATV station through the program guide demand means 231 (step S25).

[0052] The program guide information which corresponds this program guide demand signal based on an identification number from the program guide information storage means 12 by the carrier beam CATV station is returned to a subscriber side. After being received by the program guide information processing terminal 23 (step S26) and sending the program guide information sent to the subscriber side to the program guide display means 233 through the signal separation means 232, it is sent to the reservation information storage means 238. With this reservation information storage means 238, the start time of the reservation information accumulated and the start time of the program guide information sent newly are collated (step S27), and that result is sent to the reservation control means 240.

[0053] If it judges whether the reservation control means 240 has modification of start time (step S28) and there is no modification in start time, VTR22 will start an image transcription by starting the VTR control means 239 and sending a VTR control signal to VTR22 (step S29). In addition, at this time, a control means 234 chooses as the image selection means 237 the program video signal with which delivery and the image selection means 237 are acquired through the signal recovery means 236 in an image selection signal, and outputs it as an image input of VTR22. Thereby, the reserved program is recorded on videotape. And if it becomes just before the end time of a program, like the above, \*\*\*\*\* [ just before end time ] will be judged (step S30), and a reservation confirmatory order will be issued to the reservation are recording means 238. The identification number of the reservation guide information that the carrier beam reservation are recording means 238 corresponds a reservation confirmatory order is read, it outputs to a control means 234 (step S31), and a control means 234 sends the program guide demand signal which contained the identification number in the CATV station 1 through the program guide demand means 231 (step S32). The program guide information which corresponds this program guide demand signal based on an identification number from the program guide information storage means 12 by the carrier beam CATV station 1 is returned to a subscriber 2 side, and

after being received by the program guide information processing terminal 23 (step S33) and sending the program guide information sent to the subscriber side to the program guide display means 233, it is sent to the reservation information storage means 238. With this reservation information storage means 238, the termination start time of the reservation information accumulated and the end time of the program guide information sent newly are collated (step S34), and that result is sent to the reservation control means 240.

[0054] If it judges whether the reservation control means 240 has modification of end time (step S35) and there is no modification, VTR22 will end an image transcription by starting the VTR control means 239 and sending a VTR control signal to VTR22 (step S36).

[0055] The same to the broadcasting hours of the reserved program, although it is processing at the time of being broadcast as planned, if the above processing has extension of a sport relay broadcast, a sudden casualty, etc., it will come also out of moving down of the broadcasting hours of the program after it, and the program which sometimes serves as a broadcast termination.

[0056] When modification of such broadcasting hours of a program, a termination, etc. arise, he rewrites the content of the program guide information storage means 12, and is trying to always have the newest information in a CATV station side each time, as described above. Therefore, when [ of broadcasting hours ] there is modification By the reservation control means 240 performing a reservation check to the reservation are recording means 238, and performing processing which checks whether there is any modification of broadcasting hours, if it becomes just before reservation initiation It becomes processing of the waiting for time amount after accumulating information required for reservation in the reservation information storage means 238 among new program guide information (step S37) until the rewritten new start time comes, when there is modification of broadcast start time (step S27). Moreover, it becomes processing of the waiting for time amount after accumulating information required for reservation in the reservation information storage means 238 among new program guide information (step S38) until the rewritten new end time comes, when there is modification of broadcast end time (step S35). Moreover, if the re-broadcast day and broadcast time of day of the program were decided, the content of the program guide information storage means 12 is rewritten at the re-broadcast day and broadcast time of day, and when broadcast is stopped, if it becomes the date and time amount of re-broadcast by said same processing, an image transcription will become possible automatically, for example. Reservation cancellation etc. is displayed when there is no re-broadcast.

[0057] Thus, when there is a program which thought that a viewer wanted to see and record some program guide information on videotape, in the condition that the program guide information on the program which thought wanted to record on videotape has projected, if it becomes the date and the time amount it is broadcast

that the program is automatically after that only by pushing a program preprogrammed key, an image transcription will be started, and if the end time of a program comes, an image transcription will be ended.

[0058] In addition, although VTR image transcription reservation was explained, if the system which will be [ of a television receiver ] turned on if the program which controlled and reserved the television receiver starts instead of VTR, and the reserved program start, the program reservation system which changes a channel to that program is automatically realizable in explanation of this example 3, similarly. Moreover, since the program guide information which it has by the CATV station side also has the information about re-broadcast as additional information, from the program guide information on past, the time of re-broadcast is searched automatically and it can also reserve the re-broadcast.

[0059] According to this example 3, looking at program guide information, only by pushing an image transcription preprogrammed key, after that, image transcription reservation can be made automatically, and, moreover, modification of broadcasting hours etc. can be coped with automatically. Moreover, it also becomes possible to find out re-broadcast from the program guide information on the program broadcast in the past, and to carry out image transcription reservation of the re-broadcast.

[0060] In addition, although the example 3 explained above explained the example which gave the program image transcription reservation function to the thing of the content explained in the example 2, it can also give a program image transcription reservation function to the thing of the content explained in the example 1. Drawing 10 has composition which added the reservation are recording means 238, the VTR control means 239, and the reservation control means 240 to the configuration which shows the configuration of the program guide information processing terminal 23, and was shown by drawing 3 . In addition, since it does not have the signal recovery means 236 as a tuner in the program guide information processing terminal 23 in this case unlike the configuration shown by drawing 8 , the usual broadcast signal which needs to have the tuner and was separated with the signal separation means 232 needs to make VTR22 input into the antenna input of VTR. Further again, the VTR control signal taken out from the reservation control means 240 to the VTR control means 239 needs to consider as a signal including channel information, controls the tuner in VTR22 by this channel signaling, and is made to record the appointed channel with it on videotape.

[0061] The procedure in such a configuration is almost the same as the content shown with the flow chart of drawing 9 , and since the processing to which differing gives channel information to the tuner of VTR22 in the case of an instruction of VTR image transcription initiation of step S29 is only added, the explanation about overall processing is omitted.

[0062]

[Effect of the Invention] It is. the program guide information processing system

[ according to / as explained above / claim 1 in this invention ] in the CATV system in which two-way communication is possible -- A program guide information storage means to memorize the program guide information on each program broadcast at each broadcasting station is formed in the system by the side of a CATV station. Since the program guide information according to the demand was projected on the television receiver by the side of a subscriber in response to the demand about the program guide information from a viewer In each subscriber side, the mass storage in which program guide information is stored is not needed, but simplification of the system by the side of a subscriber can be attained, and low-pricing becomes possible. Moreover, since it becomes possible to use a mass storage means by establishing a means to store program guide information in a CATV office side, program guide information can be accumulated in a large quantity. For example, it is also possible to also see the program guide information broadcast by the end of today one year ago and to also increase amount of information [ as opposed to / it is possible and / one program ], and not only text but sound information, such as image information, such as an animation and a still picture, voice, and music, can be treated. Furthermore, since required program guide information can be called at any time, in order to acquire required program guide information, useless processing in which broadcast always had to be supervised can be excluded.

[0063] Moreover, since according to claim 2 the program guide information based on the current date and time information is sent out from a CATV station even if a viewer does not demand the information which specifies programs, such as a program name and a channel number [ whether even if it does not have special want to program guide information, in order that a certain program guide information may project, he watches the program based on the sent program guide information, and ] Or it can judge whether he watches other programs and can consider as the high system of convenience for a viewer side.

[0064] Moreover, according to claim 3, since the program guide information memorized in the CATV office is rewritten at any time in a CATV office corresponding to modification of program broadcasting hours etc., it can acquire the newest guide information by the subscriber side. For example, when the broadcasting hours of a sport relay broadcast are extended, a subsequent program carries down and may be broadcast, but also when such, exact program guide information can be offered.

[0065] Moreover, according to claim 4, in addition to said claim 1, it is controlled by the recovery control signal based on the channel number information included in said program assignment information outputted from said control means. A signal recovery means to restore to the usual program broadcast signal taken out from said signal separation means as a program video signal, It has an image selection means to choose one side of the program guide video signal acquired from the program video signal acquired from this signal recovery means, or said program guide display-control

means with the image selection signal from said control means, and to output it. The program name broadcast now can be known immediately, being able to change the program and its program guide under televising in an instant, and watching a program, since the synchronization with the content of program guide information and the content of the program can be taken. For example, when television is switched off and you begin to watch a certain program, it may immediately be unable to judge what kind of program the program is. In such a case, since the program guide information on the program projects by changing from a control panel to a program guide, the content of a program can be known in detail immediately. Moreover, if a program to watch among the programs broadcast now is looked for for program guide information and the program guide information projects, he can watch the target program only by changing to TV program broadcast immediately. For example, although the program name and the content are understood in the program which should be broadcast at the event, when a channel number is not known, you can watch the target program early by searching in a program guide.

[0066] Moreover, since according to claim 5 the program guide information based on the current date and time information is sent out from a CATV station even if a viewer does not demand the information which specifies programs, such as a program name and a channel number, like said claim 2 [ whether even if it does not have special want to program guide information, in order that a certain program guide information may project, he watches the program based on the sent program guide information, and ] Or it can judge whether he watches other programs and can consider as the high system of convenience for a viewer side.

[0067] Moreover, according to claim 6, like said claim 3, since the program guide information memorized in the CATV office is rewritten at any time in a CATV office corresponding to modification of program broadcasting hours etc., it can acquire the newest guide information by the subscriber side. For example, when the broadcasting hours of a sport relay broadcast are extended, a subsequent program carries down and may be broadcast, but also when such, this program guide information can offer exact information.

[0068] When said control means receives the information about image transcription reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver according to claim 7, in said configuration according to claim 1 moreover, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display-control means, the information from this reservation information storage means, and said time check -- based on the information on time from a means with the reservation control means which outputs an image transcription control signal By having the VTR control means which controls VTR in response to the image transcription reservation control signal from this reservation control means, looking at



program guide information, only by giving information required for an image transcription, after that, image transcription reservation can be made automatically, and, moreover, modification of broadcasting hours etc. can be coped with automatically. Moreover, it also becomes possible to find out re-broadcast from the program guide information on the program broadcast in the past, and to carry out image transcription reservation of the re-broadcast.

[0069] Moreover, since according to claim 8 the changed new image transcription control which carried out the broadcast time-of-day response is attained when the broadcast time of day of a program has modification, it can consider as a system with very high convenience.

[0070] When said control means receives the information about image transcription reservation of the program corresponding to the program guide information by which it is indicated by current in a television receiver according to claim 9, in said configuration according to claim 2 moreover, with the control signal from this control means A reservation information storage means to accumulate information required for reservation among the program guide information currently held at said program guide display-control means, the information from this reservation information storage means, and said time check -- based on the information on time from a means with the reservation control means which outputs an image transcription control signal By having the VTR control means which controls VTR in response to the image transcription reservation control signal from this reservation control means, looking at program guide information, only by giving information required for an image transcription, after that, image transcription reservation can be made automatically, and, moreover, modification of broadcasting hours etc. can be coped with automatically. Moreover, it also becomes possible to find out re-broadcast from the program guide information on the program broadcast in the past, and to carry out image transcription reservation of the re-broadcast. furthermore, the thing for which it is not necessary to give channel information, and VTR control is simplified, and it has the selection-control means of a program guide video signal and the usual program video signal to VTR with the configuration of this claim 9 since it has the function of a tuner -- for example, the program guide information on that program is put into the beginning of the program recorded on videotape, and it considers as the index (header) of a program image transcription -- a thing peach can be carried out.

[0071] Moreover, since according to claim 10 the changed new image transcription control which carried out the broadcast time-of-day response is attained like claim 8 when the broadcast time of day of a program has modification, it can consider as a system with very high convenience.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] Drawing showing the rough system configuration of whole this invention.

[Drawing 2] Drawing showing an example of the content of the program guide information on this invention.

[Drawing 3] Drawing showing the configuration of the program guide information processing terminal in the example 1 of this invention.

[Drawing 4] Drawing showing an example of the external control panel used for this invention.

[Drawing 5] Drawing showing an example of the displayed program guide information.

[Drawing 6] The flow chart explaining processing of an example 1.

[Drawing 7] Drawing showing the configuration of the program guide information processing terminal in the example 2 of this invention.

[Drawing 8] Drawing showing the configuration of the program guide information processing terminal in the example 3 of this invention.

[Drawing 9] The flow chart explaining processing of an example 3.

[Drawing 10] Drawing showing other example configurations of a configuration of the program guide information processing terminal in the example 3 of this invention.

### [Description of Notations]

1 ... System by the side of a CATV station

2 ... System by the side of a subscriber

3 ... Coaxial cable

11 ... Program broadcast means

12 ... Program guide information storage means

21 ... Television receiver

22 ... VTR

23 ... Program guide information processing terminal

231 ... Program guide demand means

232 ... Signal separation means

233 ... Program guide display-control means

234 ... Control means

235 ... a time check -- a means

236 ... Signal recovery means

237 ... Image selection means

238 ... Reservation information storage means

239 ... VTR control means

240 ... Reservation control means

G1, G2, and ..... program guide information

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